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ORIGINAL ARTICLES

DIABETIC COMA*

By ALEX. M. BURGESS, M.D.

454 ANGELL STREET, PROVIDENCE, R. I.

The end of the diabetic, untreated, is coma. In spite of all modern treatment the essentials of which you have heard set forth, the diabetic, armed with the best of intentions, the most conscientious care in his diet and a fund of ready information as to the emergencies that may lie in his path, still senses above him the Damoclean sword of acidosis, which at times he cannot avoid. Circumstances over which he may have no control, such as, for example, the onset of influenza or pneumonia, or a serious accident, may nullify all precautionary measures and bring it about that the outcome depends no longer on his own efforts but on the skill and resourcefulness of the physician and the nurse. Although the incidence of coma is less than formerly, it is by no means infrequent, and its early recognition and prompt treatment constitute one of the truly spectacular and worthwhile achievements that can be accomplished by the medical man. Our recent experiences at the Rhode Island Hospital in this field have convinced us of two things—first, that in treating coma we can, in cases recognized early and treated with promptness and sagacity, expect strikingly favorable results; and second, that in carrying out this treatment we are always treading on thin ice and disaster can, and occasionally does, occur.

The main causes of coma still are, according to Joslin, "ignorance and folly." Nevertheless, as has been intimated, the diabetic who is neither ignorant nor foolish may still be precipitated into the condition by the onset of an infection. It is this factor which makes many cases impossible to treat successfully, but here, as elsewhere, the early recognition and treatment of the condition may be decisive.

The differential diagnosis of coma is usually, but by no means always, easy. In practice the two conditions which give the most trouble in differentiation are insulin "shock" and the "acute abdomen." Insulin shock is often distinguishable from the history of abrupt onset, less than an hour—coma is always of gradual development, hours to days. In insulin shock the skin is ordinarily moist and pale, in coma dry and flushed. In insulin shock the pulse is full and the respirations normal or shallow, in coma the pulse is weak and rapid and the respiration full and deep, the so-called Kussmaul breathing, unless the condition has progressed to terminal exhaustion of the respiratory center. Convulsions are common in insulin shock, rare in coma. When in doubt, glucose may be given intravenously and will usually terminate insulin shock abruptly.

The second condition often confused with diabetic coma, actual or impending, especially in children, is acute inflammation within the peritoneal cavity. If one remembers that abdominal pain, leucocytosis and a generalized rigidity of the abdominal muscles are common symptoms of severe diabetic acidosis, the difficulty is quite apparent and at times, while it is quite easy to recognize the acidosis, it is impossible to say that an intra-abdominal lesion does not also exist. Under these conditions the acidosis should be vigorously treated and the abdominal symptoms, if due to this cause, will promptly subside.

In considering treatment, the most important single factor is that of the time when the condition is recognized and the treatment commenced. By way of further emphasis on the time factor, one may say that it makes much more difference what happens during the first hour of treatment than in the next eleven hours, though we may be on thin ice for even a day or more. In a nutshell, the things that we have to prevent and correct, with the main means of accomplishing these ends, may be listed as follows:

1. *Ketosis* (or diabetic acidosis). By insulin, fluids and at times glucose, subq. and intravenously.
2. *Dehydration.* By saline and glucose solutions, subq. and intravenously.
3. *Heat loss.* By heaters, blankets and hot drinks.
4. *Gastric dilatation.* By lavage and enemata.

*Read before the Providence Medical Association, April 3, 1933.

5. *Circulatory collapse.* By various stimulants, caffein, coramine, adrenalin, etc.

6. *Renal block.* By normal saline, hypertonic saline or dextrose solutions, intravenously.

For the first hour Joslin recommends for the average case insulin 100 units partly intravenously in the severer cases, heaters and blankets, gastric lavage with great care, using the Levine tube in many instances, fluids as follows: 500 cc. normal saline intravenously and 1000 cc. subpectorally—as well as hot broth by mouth if the patient can take it. After the first hour 20 to 50 units of insulin every half hour controlled by repeated blood sugar estimations. Also ginger ale and orange juice by mouth. We believe that where frequent blood sugar estimations cannot be made it is advisable to add glucose 20 to 40 gm. to the fluid administered intravenously and to give it later on either subq. or by mouth in the form of orange juice or ginger ale, so that the recovery from the ketosis shall be more rapid than the recovery from the hyperglycaemia and a dangerous lowering of blood sugar thus avoided.

Joslin states that unexplained circulatory collapse remains the most serious problem in treatment. He mentions five such cases as occurring among the last 74 cases of coma treated in his clinic. In the last twelve cases of coma seen at the Rhode Island Hospital this condition occurred twice and led to rapid exitus in both instances. The first of these patients, a girl of 16 years, a known diabetic of three years standing, entered the hospital in deep coma apparently precipitated by an upper respiratory infection. The pulse was 160 and weak, the blood pressure 80/0 as far as it could be estimated, the respirations of the Kussmaul type, and the initial blood sugar reading was 666. She had been in coma four hours before admission. Following the usual treatment in which 1000 cc. of saline were given intravenously and 50 units of insulin, the patient roused and asked for a drink of water and then she suddenly became pallid, unconscious, cyanotic and pulseless, and in five minutes she was dead. Post mortem blood sugar was 533 mg.

The second case in which this condition occurred was a boy of 11 years in which diabetes had not been recognized up to the time of the onset of coma. He had been suffering, as had other members of his family, from an acute tonsillitis. During the 24 hours previous to admission he had shown a stupor gradually deepening into coma, and glycosuria and ketonuria were found by his family physician. On entrance the temperature was 99 and later rose to 103. Pulse was 140 per min. and respirations 30 and of the Kussmaul type. Blood pressure was 82/10. Treatment included 500 ccs. of intravenous saline solution, insulin 45 units as the initial dose, enema, heaters, etc. After four hours, during which the usual coma treatment was continued, he vomited a large amount of reddish fluid, strongly positive for occult blood, collapsed and died. In both these instances one wonders if the presence of an acute upper respiratory infection with its associated toxaemia may not have been the determining factor causing the sudden collapse.

Of the last twelve cases of coma on record at the Rhode Island Hospital, these two and three others died. Two of the remaining deaths were beyond a doubt unavoidable. One patient was admitted evidently in the final stages of coma where relief could not be expected, and the other was a 76-year-old man whose coma developed in the hospital following an amputation for an infected leg and gangrenous foot. The fifth death following coma is more important for our consideration. This patient, a seven-year-old boy, was rescued from profound coma by the usual methods only to die on the fourth day in an attack of unconsciousness with pulmonary edema, the typical picture of hypoglycaemia. This child had received 305 units of insulin in the first 24 hours. On the evening of the third day in the hospital he was found unconscious, was brought back by administration of glucose. At 12:30 A. M. he again became unconscious and was again brought back, but a third attack of unconsciousness proved resistant to both glucose and adrenalin injections and the patient died. The blood sugar was found to be 40 mg. during the final attack.

The seven other coma patients recovered under treatment in spite of the fact that four of them were associated with severe infection, one with advanced pulmonary tuberculosis and one was an 85-year-old senile, arteriosclerotic man. From our experience in these and other cases seen at the hospital, we can say that treatment along the lines that have been mentioned must be given with promptness and vigor, a favorable outcome will usually result, but that in some instances it is impossible. Following the recovery from the unconscious state the possibility of subsequent hypoglycaemia must be kept in mind and that at any time fatal circulatory collapse is to be feared.

DIET IN THE TREATMENT OF DIABETES

By Dr. Herman A. Lawson
454 Angell Street, Providence, R. I.

In speaking to one of our members a few days ago, he referred to the subject of this evening's talk as that "hardy perennial." This is a very apt description, for the subject of diabetes crops up every year to claim our attention. Nevertheless, this old, familiar perennial has shown some very interesting variations and changes in the past few seasons. Moreover, diabetes is one of the most common diseases which the physician encounters and it is, in addition, an important cause of death and disability and for that reason we are perhaps justified in taking your time and thought tonight.

In the treatment of diabetes, diet is of first importance, and in the dietary treatment the most important single factor is undernutrition. Nothing has changed these conceptions, not even the introduction of insulin.

Nevertheless, fashions in prescribing diets change from time to time and there have been very important changes in the past five years. The modern method of diet prescription can be briefly summarized by saying that we have turned away from the highly abnormal, high fat diets, and are trying to prescribe diets which more closely approach the normal in that we keep the fats at a low level and give a much higher content of carbohydrate. Let us look for a moment at the chart which contains examples of several diets. I have outlined first the average normal diet for a man of 150 lbs. doing moderate work. You will notice the high carbohydrate content—400 grams. Almost all normal diets approach this figure or exceed it. The amount of protein varies, depending on whether or not the individual is fond of meat and other protein foods. The same is true of fat—some people are extremely fond of butter and cream and consume large amounts. But this example of a normal diet brings out the important fact that all normal people eat large amounts of carbohydrate, from 400 to 500 grams. Immediately below this normal diet I have put a high fat diet which was prescribed by Dr. Newburgh in 1929. The difference in these two diets is very striking. The normal person consumes 14 or 15 times as much carbohydrate as is allowed in this high fat diet, and would probably eat only two-thirds or one-half as much fat. You can readily see what a grossly abnormal diet this is and I believe you can well imagine how distasteful it would be to most of us. Immediately below this high fat diet I have given three examples of high carbohydrate diets which represent the modern tendency in the treatment of diabetes. Note carefully that although the carbohydrate allowed by Rabinowich is ten times that prescribed by Dr. Newburgh, nevertheless the total calories in Rabinowich's diet are less than the calories in Newburgh's diet. Dr. Rabinowich, in spite of his very high carbohydrate diet, still adheres to the principle of undernutrition. Fortunately the patient is able to remain sugar-free and needs no increase in insulin when changed from high fat to high carbohydrate diet. Richardson has shown that one can change abruptly from high fat to high carbohydrate without causing the appearance of sugar in the urine or a rise in blood sugar, and without necessitating any increase in insulin dosage. This is possible because when we make this change we still follow the principle of undernutrition—indeed, the total caloric intake for the day is usually less in high carbohydrate than high fat diets.

I think these figures make it easier for you to decide which of these two diets you would choose. I am sure you would select and prescribe Dr. Rabinowich's diet, even though the calories are somewhat less than in Newburgh's diet. What does the difference mean in the actual daily life of the patient? What specific difference does it make in his meals each day? In the first place, on the high fat diet the patient was allowed for the whole day one generous serving of green vegetables and one small serving of fruit, but absolutely no other form of carbohydrate food. The rest of the diet was made up of very large amounts of cream and butter, salad dressing, bacon and five or six eggs. The patient was never allowed crackers, cereal, milk, bread or potatoes and only very small amounts of fruit and vegetables. I am sure that you will all agree that such a diet would be exceedingly monotonous and because of its marked variation from the normal would cause a great craving for meat and particularly for the carbohydrates which we all eat in large amounts. It is also lacking in minerals because of low content of fruit, vegetables and milk. In contrast to this Rabinowich's diet provides:

Generous servings of fruit for each meal.
Cereal.
At least 1 pint of milk daily.
2 or 3 slices of bread daily.
4 oz. potato.
2-3 oz. meat.

I think this brings out the important and striking difference in the diets of yesterday and today — a yesterday in the very recent past. These high fat diets are still prescribed today by men who sincerely believe in their merits. Nevertheless, one great disadvantage of and objection to these high fat diets is the fact that they deviate so markedly from the normal diet that it is a great hardship for many patients to follow such a diet conscientiously from day to day. There are other facts in favor of high carbohydrate rather than high fat diets. I will not attempt to name them all or to offer evidence in support of them, but briefly to refer to some of the more important. (1) It has been claimed and definite evidence has been brought forward to show that an increase in fats and marked reduction in carbohydrates impairs the carbohydrate tolerance. The patient loses more and more the ability to burn carbohydrate. It has been shown that placing a normal person on a high fat diet reduces his sugar tolerance. (2) In countries where diets consist largely of carbohydrates, diabetes, when it exists, is usually mild. Diabetes is most frequent in countries in which the per capita consumption of fat is greatest. (3) Joslin has pointed out that the diet of those diabetics who have lived the longest, whether they showed sugar or not, were those whose carbohydrate was never long reduced to a low quantity. (4) Both diabetics and normal individuals can work much more efficiently by using carbohydrate as fuel. It has been demonstrated in the laboratory that experimental normal individuals develop fatigue much more rapidly when on a high fat diet. (5) Acidosis develops much more readily and rapidly in patients on a high fat diet. Patients on such a diet almost constantly have a mild acidosis so that we can detect acetone in the urine and a strong acetone odor on the breath. Moreover, it has been demonstrated that the easiest way to produce experimental coma in dogs is to suddenly withdraw insulin from a diabetic dog who is liberally nourished with fat. (6) High fat diets are expensive. (7) It is just as easy to keep sugar free and to keep blood sugar within normal limits in high carbohydrate diet—in other words, the high fat diet does not make it easier to control diabetes. (8) One of the helpful things the high carbohydrate diet has done is to eliminate the necessity for accessory food factors like bran muffins and bran wafers and such things as gluten bread. (9) Perhaps the most important objection to a high fat diet is the possible or theoretical relation to the development of cardiovascular disease with all of its complications. Joslin has summed up his antipathy to high fat diets as follows: "With an excess of fat diabetes begins and with an excess of fat patients with diabetes die, formerly of acidosis and now of arteriosclerosis." There is a great deal of theoretical evidence that high fat diets which produce a high blood cholesterol may be a very important cause of the high incidence of arteriosclerosis from which diabetic patients today die in considerable numbers. Indeed, degeneration of the blood vessels constitutes the greatest menace to diabetics today. This is the most important objection to high fat diets. During the next five or ten years we shall have more than armchair evidence to tell us whether or not high fat diets with high blood cholesterol have been a factor in causing the universal tendency to arteriosclerosis in diabetics of any age. The increasing death rate from diabetes is found in people of middle life and beyond, and in these patients it is not acidosis and coma which causes death but the sad train of complications which result from arteriosclerosis. If the high carbohydrate and low fat diets will reduce this tendency to arteriosclerosis, we shall have made a very important advance in the treatment of the disease.

If we accept the theory that high carbohydrate diets are better than high fat diets, we ought, of course, to attempt to give our patients the benefit of such diets. In order to accomplish this it will be necessary to prescribe all diabetic diets in definite, specific terms in which every item is measured either by weight or by household measures, so that the exact consumption or total daily intake of carbohydrate, protein and fat is known and so that we may control the patient's daily caloric intake. The physician cannot prescribe such diets unless he learns the approximate composition of all common food stuffs. It is very unsatisfactory and very unscientific to treat diabetes by prescribing dietary restrictions in general, indefinite terms. So often patients are advised that they must give up sweets and starches and make their diet of green vegetables, meat, eggs, and gluten bread, etc. Unless the diabetes is exceedingly mild, such treatment will accomplish very little. The patient will have no idea of how much he may eat of the foods allowed. He will not become sugar free unless he reduces his total caloric intake, even though he cuts carbohydrate down to a very low level. Eating unlimited

amounts of gluten bread will cause him to show sugar in the urine almost as certainly as eating white bread. Moreover, such a diet is essentially a high fat and high protein diet, and I have already enumerated a number of objections to such a diet. The doctor must teach the patient that there is no food which he can eat in unlimited amounts. If he chooses to prescribe gluten bread, he should tell the patient exactly how many slices he may have. It is the doctor's business to dispel such superstitions as that which holds that dark bread is all right for him to eat and white bread harmful.

The patient's welfare depends on his own knowledge of all things pertaining to this disease. The doctor must teach himself in order that he may teach his patient, for the education of the patient is one of the most important duties which the physician must perform in the treatment of diabetes.

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INSULIN — ITS USE IN DIABETES MELLITUS*

By Louis I. Kramer, M.D.

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Ever since Lepine[1] inferred that the pancreas excreted a glycolytic ferment which was responsible for sugar metabolism, and the failure on the part of that organ to excrete such a hormone resulted in diabetes, medical men have attacked this problem with greater zeal and enthusiasm. The culmination of these efforts ends with the discovery of insulin by Banting and Best in 1921-1922—one of the greatest achievements in medical science. For, truly, insulin has not only saved and is continuing to save thousands of lives, but has transformed chronic diabetic invalids who were always an economic liability to an economic asset. No longer are children doomed to die from this disease in their early childhood, but, on the contrary, are enabled to grow, develop, and lead as useful an existence as any normal child.

Because of the tonic effect of insulin, its use has been extended to many varied conditions, particularly that of undernutrition.[2] Its greatest usefulness, however, is in treating diabetes. Here we have a definite need for insulin, because the immediate cause of diabetes (hyperglycemia and glycosuria) is insulin deficiency, and by supplying the deficient factor the condition can be kept under control. The successful management of a diabetic at present obviously depends upon the intelligent use of diet and insulin.

Insulin is measured in terms of units. Originally a unit of insulin[3] was defined as that amount which would lower the blood sugar of a rabbit weighing two kilograms to the convulsive level within four hours. This was later modified to the extent that the animal was deprived of food for 24 hours. Because of the normal human variations in carbohydrate metabolism, a clinical unit was established which is a third of the amount of the original unit.

The carbohydrate equivalent, however, is measured in terms of number of grams of glucose each unit of insulin causes to metabolize. This deduction is not entirely in accord with our present conception. The insulin coefficient varies with different individuals, depending on the type of diet one is on and the amount of insulin one takes. Low carbohydrate, high protein and fat diets have a tendency to lower the carbohydrate equivalent, while high carbohydrate, low fat diets,[4,5] and keeping the protein down to low normal level, tend to increase this property of insulin. Of course, the total calories per day must be kept to a little below the basal level to get most out of insulin therapy. Geylen[6] has been able to show a carbohydrate equivalent of 27 grams per unit of insulin on the high carbohydrate, low fat

*Read before the Providence Medical Association, April 3, 1933.

diets in some instances. Again, large amounts of insulin in a given patient show a lesser glucose equivalent curve than smaller amounts in the same subject. This deduction may be attributed to the fact that when large amounts are given a good deal of it probably escapes the body before it has an opportunity to metabolize glucose. For practical purposes, the average glucose equivalent per unit of insulin as determined by Wilder,[7] Boothby, and others, stands at present acceptable. It is 1.45 grams of glucose per unit of insulin, and ordinarily varies between 0.9 grams and 3.1 grams.

Insulin is put up in 5 cc. and 10 cc. vials in five different concentrations, U 10, U 20, U 40, U 80, and U 100. The unit is always the same, the concentration differs. The most popular and most used strengths are U 20 and U 40, and the insulin syringe is graduated for these two strengths. U 80 and U 100 are rarely used by the average diabetic. Of course, if the diabetes is very severe, the daily insulin dosage very high, and the patient intelligent, the higher concentrations may be used with justification. The danger lies in possible insulin reaction, because of the lowered margin of safety.

Insulin is administered subcutaneously and intravenously, preferably subcutaneously. The intravenous route should be resorted to in emergencies only, as in coma where rapid action is of the utmost importance. Attempts to give it by mouth or rectum have met with failure. The inunction method proved to be of little value. The conjunctivae[8] have been resorted to experimentally with some success. Only 40% of the total amount given this way was utilized. It may be given into the arms, thighs, abdomen, and buttocks, but it is well to instruct the patient that he select a different site for each injection. Continuous injections into the same spot usually causes induration. This makes absorption practically impossible. Considerable attention should, indeed, be given to sterilization of the syringe and needle, either by boiling or the use of alcohol. The site of injection, too, should be cared for scrupulously by the use of alcohol and iodine.

Usually insulin is administered one to four times daily, twenty to forty-five minutes before meals, preferably one-half hour before meals. Some[9] feel that to severe diabetics it is best to give the insulin in the following manner. First dose one hour before breakfast, second dose one hour after the noon meal, and the third dose two or three hours after the evening meal. For general use, however, it is much more satisfactory to give it one-half hour before meals. The number of daily injections depends upon the severity of the diabetes, and the dosage of insulin needed to keep the patient sugar free. When one requires more than fifteen or twenty units daily, it is best to give it in two or three doses depending on the patient's reaction to insulin. The severe diabetic invariably has to have three doses daily, and some need an extra midnight dose to show a negative urine test for the entire twenty-four hours. It seems that this type of patient, on three doses, will show a positive evening and early morning test, but clear the rest of the day. If a small dose is given before retiring, the chances are that the urine will be negative throughout the entire twenty-four hours. In our clinic at the Rhode Island Hospital four diabetics are severe enough to need four daily insulin injections to keep them sugar free the greater part of the twenty-four hours.

Some are "Insulin Wasters,"[10] that is, the insulin given subcutaneously acts on them as if given intravenously. Their blood sugar decreases rapidly, but returns to the original high level with equal rapidity. These patients, in spite of their frequent severe hypoglycemic reactions shortly after an evening dose, show a hyperglycaemia and glycosuria the following morning. These patients are advised[11] to take small doses of insulin at frequent intervals, every six hours, rather than in relationship to their meals.

The dosage of insulin depends on the severity of the diabetes, the type of diet, and the total caloric intake. The higher the total caloric allowance the larger the insulin need. The carbohydrate and fat ratio also determines to some degree the insulin requirement. In 1931 the number of patients in the clinic requiring insulin was 164 or 53.5% of the total number of clinic patients. In 1932 the number of insulin patients dropped to 142 or 35% of the total number of clinic patients. We are unable to give a satisfactory explanation to account for this drop, but if we can safely eliminate the possibility that because of the economic depression we are seeing in the clinic a greater number of mild cases, who formerly consulted private physicians, we may rightly assume that the noticeable increase in tolerance is due to the higher carbohydrate and lower fat allowance in our diets. The insulin dosage in our clinic varies from five to seventy-five units daily.

Intercurrent infections completely upset the insulin and diet balance. It seems that an infection either inhibits the action of insulin, or lowers the carbohydrate metabolism, or does both. Mental strain, untreated syphilis, and menstruation have a similar effect on the insulin and diet balance. At times, if the infection is very severe, the patient may become insulin resistant as illustrated by this case:

*Case J. K., male, 48 years old. A mild diabetic of one year duration, and easily controlled by diet without insulin, became very severe and uncontrollable even when given tremendous doses of insulin, because of an infection in his right foot. At the onset of the infection the diabetes was readily manageable on a diet of C. 110 grams, P. 60 grams, and F. 57 grams, with 30 units of insulin daily. On this scheme he withstood successfully an operation of multiple incisions with drainage, under ether anesthesia. The diabetes remained under control for the next 22 days, although the infection continued to spread. Another attempt to check the infection was made, this time under gas oxygen anaesthesia with a small amount of ether towards the end. Following this operation the patient began to run a downhill course. Neither the infection nor the glycosuria could be checked. The diet remained the same, the insulin was increased, at first to 75 units a day, to 240 units a day, and finally to 480 units a day with no improvement. Amputation of the foot under spinal anaesthesia, twelve days following the last operation, as a final attempt to stem the progress of the infection was of no help. The patient developed coma and died four days later. The total amount of insulin for the last eleven days of the patient's life was 2875 units, or a daily average of 261 units. The blood sugar ranged between 200 mg. and 235 mg. per 100 cc. of blood. Blood cultures on two occasions were negative. Unfortunately an autopsy was not obtained. No definite conclusions can be drawn from this one case. However, it is safe to assume that the infection in some way inhibited the expected action of insulin.

The problem, of course, is to determine what type of patient should receive insulin. We feel that every diabetic should have sufficient knowledge and training in the use of insulin. The reasons are obvious. (1) Every diabetic, no matter how mild, may become severe enough to require insulin. (2) Intercurrent infections always aggravate the diabetes to a sufficient degree that the use of insulin may become imperative to escape ketosis. (3) Patients adhere more faithfully to their diets when on insulin. And lastly, a diabetic who is unable to metabolize at least 100 grams of carbohydrate without spilling sugar in the urine should indeed take insulin.

Insulin must always of necessity be injected by the patient or someone in the household who is with the patient or available at the proper time. It is worth while mentioning that abscess formation, because of self injection, even among the most ignorant, is very rare. In our clinic at the R. I. Hospital, we have 142 patients who take from two to four daily injections of insulin, an average of over 400 injections daily, and during the entire insulin period from 1923 to January, 1933, there occurred only three instances of abscess formation—one in a young man, case J. T., age 23, who has been on insulin since 1922—received his first insulin injections at the Peter Bent Brigham Hospital, Boston —a rather severe diabetic, who has to his credit 12 hospital admissions, and is now taking four daily insulin injections; one in a little boy, case R. G., 12 years old, diabetes five years standing, and taking three and four doses daily; and one in a young woman, case E. S., age 37, duration of diabetes three years, takes insulin three times a day. In all the three cases the abscess formation was due to carelessness in sterilizing the syringe and needle.

Like any other drug, insulin has its dangers, and there is reason to believe that many deaths have been precipitated by an overdose of this hormone. It is, however, desirable that every diabetic have some experience with this phenomenon so that he may know what to do when an emergency arises. All our insulin patients are instructed to carry with them a lump of sugar or candy and are advised to use same as soon as one feels a reaction coming on. The symptoms are due to a lowering of the blood sugar which manifests itself in nervousness, restlessness, extreme weakness, light-headedness, and tremor associated with profuse sweating. If the symptoms are allowed to progress, mental confusion, disorientation, and finally convulsions and coma supervene. No two diabetics experience the same early symptoms. It is, therefore, very important that each patient study his own reaction to insulin. One of our patients, E. F., who takes four

(*Continued on page 122*)

*Case, J. K. Private patient, Miriam Hospital. All other cases mentioned are from the diabetic clinic, Rhode Island Hospital.

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PROVIDENCE

Meets the first Monday in each month excepting July, August and September

J. W. LEECH	*President*	Providence
P. P. CHASE	*Secretary*	Providence

WASHINGTON

Meets the second Wednesday in January, April, July and October

E. E. KENYON	*President*	Kingston
JOHN CHAMPLIN, JR.	*Secretary*	Westerly

WOONSOCKET

Meets the second Thursday in each month excepting July and August

W. A. BERNARD	*President*	Woonsocket
T. S. FLYNN	*Secretary*	Woonsocket

R. I. Ophthalmological and Otological Society—2d Thursday—October, December, February, April and Annual at call of President. Dr. Herman A. Winkler, President; Dr. N. A. Bolotow, Secretary.

The R. I. Medico-Legal Society—Last Thursday—January, April, June and October, Dr. Fenwick G. Taggart, President; Dr. Jacob S. Kelley, Secretary-Treasurer.

EDITORIALS

NOISE

There now comes the interesting and welcome news that there is to be established in the Health Department of the City of Boston a Noise Nuisance Bureau, and that the Mayor of Boston is inclined to assist this bureau in every possible way. Not long ago there was considerable agitation in Providence regarding what now seems to be a well recognized health measure. A committee was established, electro-acoustic measurements were made in different parts of the city, and members of the city government were approached with the hope that some sort of enforceable bill might be enacted whereby people might be allowed a few noiseless hours in which to obtain the rest and sleep necessary for the maintenance of public and private health. Several articles in favor of the movement appeared in this column.

As near as can be learned this movement died aborning, the committee fell by the wayside as it were, and no bill has been enacted. We still have noisesome whistles, a waterfront that is more noisy than a crowded street, the blare of loud speakers in some of our best streets, and apparently a complete

disregard of the rights and privileges of others. The barking dog still holds forth in the wee small hours and there seems to be no propaganda for the aid of those who from night work must sleep in the daytime. Ours is a very noisy city; much of this noise is necessary, but a great deal of it might be prevented could we only make people decent-minded. Noise is to be classed with filth, odors, smoke and other conditions which, although not immediately disease-producing, nevertheless predispose to it. It will be a distinct step in advance if the committee can be aroused to this important health project. This is particularly pertinent at the present time when the heat will require the opening of windows more liberally, and the good air that comes in through these windows should be as free from noise as of disgusting smells and pathogenic bacteria.

AS TO MEDICAL MEETINGS

The annual meeting of the State Medical Society this year was exceptionally well attended. In fact, the attendance seems to have gradually increased during the past few years.

In looking over the last program of the meeting one can easily discover why the attendance is picking up. The eight papers covered a very wide range of subjects and varied from pure physiology and pharmocology to both medical and surgical subjects of practical importance to the clinician. In addition, five of the papers were read by guests of the Society who are recognized as authorities in their respective fields.

The increasing number who attend these state meetings and particularly the one in June make it necessary to adhere strictly to a schedule in order that those in attendance may allot their own time. THE RHODE ISLAND MEDICAL JOURNAL suggests that members of the Society be assured the meetings will positively begin at a certain time and will likewise end at a definitely stated time. A schedule can be adhered to without causing hardship if such a plan is explained to the readers when they are invited. Two of the best attended meetings in New England are run on a definite schedule to which no exceptions are allowed, regardless of the speaker's reputation. If such a policy were adopted by the State Society it would add to the growing popularity of the programs.

GROUP PRACTICE

The comprehensive report on "Private Group Practice" in the United States which has been published in the department of Medical Economics of the Journal of the American Medical Association deserves more than a passing glance from medical practitioners whether or not they are members of "groups." In reading it over one is impressed by two things: first, that the average group offers nothing to the patient that cannot be provided for him as well by the average doctor who avails himself freely of independent specialists and hospital facilities; and second, that the average member of the average group has gained by his membership no material advantage over the average non-member. In addition, it may be stated that the superior group, such as the Mayo Clinic, for example, after which many of the more pretentious combinations have been patterned, itself offers nothing to the patient that cannot be as well provided by the superior practitioner working with superior specialists and hospital facilities. Certainly inferior, poorly trained practitioners or those whose work may be open to criticism as unethical or tending to commercialism are no less a thorn in the side of the public and the profession if gathered into co-operative organizations than if independent.

If, then, we may say that no positive advantages can be justly claimed for the group system, we should also inquire as to the existence of positive disadvantages. One of the first that will occur to us as obvious is the very disadvantageous limitation of choice in referring patients that the group system imposes. The criticism of informal cliques as becoming close corporations and limiting the free passage of patients from one doctor to another, as discussed editorially in the last issue of the JOURNAL, applies with even greater force to the formal groups when by agreement the study of a given patient is limited to members of the group. Outside doctors, generally speaking, find it on this account imperative to prevent their patients from consulting any member of the group. This represents a most unhealthy division of the medical fraternity. Furthermore, the work of the groups generally tends to a greater appearance of commercialism than does that of the individual practitioner, particularly when by the employment of a lay business manager, a most pernicious expedient, they add the fact to the appearance. And finally, in

spite of every effort on the part of conscientious group members to prevent it, the ideal relationship of confidence and friendship between patient and physician is bound to suffer. With the divided medical personality that the patient must face in the group he can hardly be blamed if he doesn't know who his doctor is. On many occasions a pink pill and a kindly word from a wise family physician will do more good than the elaborate and expensive treatment following the multiple elaborate, expensive, often demoralizing and at times useless examinations which the patient visiting a group must undergo (and pay for). The family physician knows that he has at hand in his local hospital with its staff of specialists the means of carrying out all the elaborate investigations needed for the solution of the clinical problems of those for whom this line of procedure is appropriate, and he can also skillfully differentiate those for whom this sort of thing is unnecessary or positively harmful.

Man is a social animal and undoubtedly his best work is team work. That practitioners should form attachments to each other based on mutual confidence and friendship is inevitable and right. That the medical man, for example, should have one or more surgeons to whom he usually refers his patients, *other things being equal,* is also inevitable and right. Nevertheless, if he would do what is best for his patients, as well as for his colleagues and himself, he should strictly maintain an absolute freedom of choice in referring his patients. In this way perfect co-operation between practitioners in the field of general practice and the specialties may be maintained with the preservation of all the advantages and with none of the disadvantages of group practice.

INSULIN—ITS USE IN DIABETES MELLITUS

(*Continued from page 119*)

doses daily, is subject to insulin reactions, but he has never allowed his reactions to progress to a dangerous point except once. About two years ago while he was out walking, he felt a reaction coming on, but before he had an opportunity to reach for a lump of sugar he carries with him, he became confused, irrational, and disoriented. His vision was blurred, his gait staggering, he perspired profusely, and his entire body shook as if he were having a chill. A police officer mistook him for a drunkard. Fortunately, the patient succeeded in getting a lump of sugar into his mouth, and after a few seconds he was able to explain to the satisfaction of the officer that he was in an insulin reaction.

The differential diagnosis of insulin shock and diabetic coma may at times seem confusing. But if we visualize the contrasting features in these two conditions, the chances for error in diagnosis are easily eliminated. Insulin shock comes on suddenly, following an overdose of insulin, or omission of food after an insulin injection. The skin is moist, the breathing is normal, and the general appearance is that of weakness. In the onset the patient is usually excited and disoriented. Tremor is usually present. The urine is negative for sugar, although the first specimen (bladder urine) may yield a positive test. The response to carbohydrate therapy is almost instantaneous. In diabetic coma, on the other hand, the onset is gradual, a matter of days, usually follows an infection and omission of insulin. The skin is dry, the breathing is labored or Kussmaul type, the eyeballs are usually soft, the vision dim, and the urine is positive for sugar and acetone bodies. Nausea, vomiting, and abdominal pain are usually present. The response to treatment with insulin is gradual.

In conclusion, it may not be amiss to sound a word of warning that caution should be exercised when using insulin in the aged and those suffering from arteriosclerosis and heart disease. Its use is absolutely contraindicated in acute attacks of angina pectoris and coronary thrombosis. It has been shown that insulin has a tendency to increase, temporarily, the work of the heart.[12] These patients do better showing a little sugar in the urine.

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CERTIFIED MILK*

By HARRIS MOAK, M.D.

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How often is milk the first and last food of life!

How often is the good physician there at the entrance and exit and in supreme command!

The good physician says that "A healthy mother's milk is best for her babe," and the rest of us join in a loud Amen.

The medical profession's interest in milk starts where nature leaves off—when we take up substitution. In artificial feeding of babies, what thousands of ideas have been tried, and are yet being tried! It is really amazing what things will keep a baby alive. Shipley relates the story of a family taken captive during the French and Indian War: "Mrs. Johnson had no milk for the baby. There was no food in the possession of the party except some dried meat from one of the horses which had been in the block house and which the Indians had killed and cured. The baby was fed on her journey to Quebec by the man who carried her after the following fashion. He would chew up in his mouth a morsel of the dried horse meat, and then spit it into the mouth of the baby. The child handled the food perfectly well, and not only lived to arrive in Quebec, but grew up into a woman, married, had a family of her own, and finally, a very pretty ending of the story, lived to nurse in his last illness the man who had fed her on her way to Canada."

*Read before the Providence Medical Association, March 6, 1933.

Yet with all the infant food ideas that have come and gone, clean, pure, nutritious cow's milk is still being used.

It is now past forty years since a plan was formulated whereby Certified Milk would be produced under the control of a Medical Milk Commission designated by a representative medical society. Forty years since the medical profession first took the science of bacteriology into the cow stable. Scarce anyone believed at that time that there would be need for such a medical endeavor for more than a short time. Yet here we are today with more and more complex problems than we ever dreamed possible.

What is Certified Milk? (The original definition of Dr. Coit, the founder of the Medical Milk Commission)

"Certified Milk is a product of dairies operated under the direction of a Medical Milk Commission, which body is appointed for voluntary service by a medical society. The milk is designed to fulfill standards of quality, purity and safety to insure its adaptability for clinical purposes and the feeding of infants.

"The certificate of the Commission constitutes its authorization for the use of the term 'Certified.' The certification is based upon the fulfillment of prescribed medical requirements for the milk and is the guarantee that it conforms to definite standards and to fixed methods and regulations for its production.

"The standards of quality consist of fresh, whole milk, unchanged by heat or cold, less than twenty-four hours old when sold, held between the temperatures of 48 and 50 degrees Fahrenheit, with not less than 12 per cent of total solids, with fat content between 3.5 and 5.5 per cent, and without the addition of any other substance, material, chemical or preservative.

"The standards of purity for the milk consist of the entire absence of particles of foreign matter, of the lowest possible bacterial and dust dropping content consistent with the highest possible practice of dairy hygiene, provided that the numerical bacterial contamination is at all times below an average weekly count of 10,000 per cubic centimeter.

"The standards of safety consist in the use of every known means to exclude from the milk pathogenic micro-organisms, a medical guarantee that every employee handling the milk is free from disease and is not a disease carrier, and a veterinary

guarantee that the cattle are in perfect health and cannot transmit through the milk any bovine affection.

"The methods and regulations for the production of Certified Milk are based upon the most advanced clinical requirements, prophylactic science and dairy husbandry and are changed as the action of the Commission modifies its technique for the attainment of its standards."

A technical definition is found in the Methods and Standards of the American Association of Medical Milk Commissions. This booklet of sixty-eight paragraphs is recognized and used throughout the United States. They are flexible and can be changed at any Annual Meeting. They are so changed in some respect nearly every year. As Kelly of the Bureau of Animal Industry at Washington has pointed out, Certified Milk is the only milk in the United States produced under uniform standards. All other grades of milk vary greatly in standards and are different in nearly every city.

The Standards for Certified Milk are analogous to U. S. P. Standards for Pharmaceuticals. What good physician today would want or dare use vital drugs of unknown production or quality? Yet how many physicians today will do this very thing with milk, that most vital of all foods? The physician cannot or does not often go to see the source of the milk supply he is using. Thus the Milk Commission is set up by your Medical Society to undertake the supervision of and vouchsafe for you a little high grade or Certified Milk which you can use with full confidence in your nutritional needs. The keystone of our requirements for Certified Milk is to keep bacteria of all kinds out of the milk. At first our success was largely measured and judged by low bacterial counts — the kind that grow on ordinary plates, the best index of cleanliness and cooling that we have. But how far we have departed from judging Certified Milk alone by this standard! Disease germs rarely show up on these plates, and we all know that a low count milk might be high in danger—and vice versa.

For the reason that tubercle bacilli do not grow on ordinary plates and that it takes days or weeks to prove their presence in milk, it was required from the first that all animals producing Certified Milk should be regularly tested and reactors eliminated.

Latterly the same requirement for Bang Abortion disease in cattle. Also the various means of detecting and eliminating cattle with other diseases. Disease-free animals are fundamental with Certified Milk. Though it is probably long years ahead, should not the ultimate goal in the dairy industry be clean, healthy animals? Who among us or among our patients really relishes a glass of milk from a diseased animal, even if it is pasteurized? What is true of animal risks is also true of human risks. Thus our careful control by complete physical and human specimen examinations of all new employees and weekly medical inspections thereafter.

"In June, 1932, the Board of Health of the City of Springfield, Massachusetts, held a hearing upon a proposed ordinance forbidding the sale of natural Certified Milk, except upon a physician's prescription. The four Certified Dairies and a number of raw producers were represented. An invitation to attend and speak at this meeting was accepted. The control of human risks by weekly medical inspections was explained and scores of reports from the Certified Producers were offered in evidence. Occasion was taken to point out that this protection could not be omitted even if the milk was pasteurized. Several cases were pointed out where milk believed to have been properly pasteurized was subsequently infected and caused epidemics. That the ultimate factor of safety of pasteurized milk is the proper and careful medical examination and inspection of all employees engaged in this work, the same as obtains in Certified production.

"The result was that Certified goes on as before, but all raw producers were asked and assented to similar medical control."

Richardson says:

"It may fairly be asked why, when City, County and State, and sometimes all three at once, are already engaged in the inspection of the dairying industry, the Medical Profession should step in and presume to erect another set of standards and series of inspections? Why isn't such action superfluous, not to say impertinent?

"The only adequate answer to such a question is the statement that, if a physician desires to avail himself of the highest potentialities inherent in the use of milk as a tonic, as well as the most valuable single dietary factory that we have, he must be able to order milk of a decidedly better grade than can be assured by any compulsory inspection that has yet been demanded anywhere, so far as is known. Certified Milk is nothing more nor less than milk

produced as any decent man or woman would wish to produce it for his family and his guests, if he were himself the owner of one or two cows, and conversely, that no other grade of milk, whatever letter of the alphabet be used to designate, it is so produced."

The questions of cleanliness, healthfulness and safety of Certified Milk are today well understood and very generally lived up to. One might say that the medical profession could lay aside its interest in the milk question. We have saved our babies. The infant mortality from bad milk is almost completely conquered. Let's rest on our laurels!

But progress will not have it so. Progress is always asking questions. Why do we use milk? Not because it is safe or clean or pure but because of the nutrition it contains. Does the nutrition in milk vary? And an increasing multitude say "yes." Well, we medical men are off again on an entirely new tack of the milk question. (Let one remind you that the word "tack" means not only a new course of action but in Provincial English it means, nourishment: applied to the food of cattle.)

The interest in the question of the nutrition from milk may well be judged by noting that the recently published volume of the White House Conferences on "The Production and Control of Milk" is quite over half devoted to the "Nutritional Aspects of Milk," and only ten of the 372 pages devoted to "The Control of Milk"—almost a misnamed volume. The work on Milk and Nutrition is so extensive and technical that I am only able to glean and give you a few generalities.

Our teeth and our tissues come only from the elements of nutrition, from our food. Take this question of the teeth alone. Where do they come from? How are they formed? Medical men are taught in their embryology that the dental buds for both the first and second sets of teeth are set about the 49th day after conception. The foundation element of the tooth is calcium or lime. The mother cannot make something out of nothing. She must either have this element in her food or else rob her own body, and this is often noted during pregnancy. The grinding surface of the teeth are all formed before the child is born. Teeth grow from the grinding surface down and the root growth lifts the tooth out.

Many studies have shown that the one best food for furnishing calcium is milk. An editorial in the American Medical Association Journal says, "The nutrition of a baby before it is born is quite as important as after it is born." The nutrition of a baby after it is born should be from its mother's breast; but the mother, again, cannot make something from nothing and we are finding in breast feeding experiments that nutritious milk is the very best galactagogue.

Hoobler has shown with human beings that the vegetable proteins are insufficient and inefficient in the production of milk protein. He has shown "that milk protein in particular affords the best source for the protection of the maternal tissue and the increase in the mammary secretion." Never has there been a time when the suggestions that present themselves in the light of the foregoing observations on milk production in woman been more deserving of consideration.

Here are two great fields for the use of not only clean and pure but nutritious milk, and it brings us up to the child that has to be artificially fed as well as the whole growth period of our children or past the age of puberty. It isn't enough merely to keep the baby alive today, but what of its proper nutrition and growth in all the years after infancy?

If we count on milk to help us in the growth and nutrition of our children, then let us most carefully inquire into the quality of the milk. Milk may be rich or poor, it may be clean or dirty, it may be safe or unsafe, it may be young or old. Twenty-five years ago our whole ambition was to make it safe—a low bacterial count, free from disease germs. This one factor was largely accomplished by pasteurization. We made milk safer but we did not know what else we did to it at the same time. We used to think of milk as containing so much lactose, protein, fat, ash, and water. What an amazing change in the concept of milk today as chemists and students of nutrition have looked further into it. How complex a molecule of milk seems today. During the recent years we have learned of the food accessory factors or vitamins A, B, C, and D (and perhaps the rest of the alphabet before we finish). We have taken the protein factor apart and find it made up of 17 or 18 various amino acids. We have learned how wonderfully the calcium and phosphorus and many other minerals are put in milk, and yet the more we learn about it the more remains to be solved. We know practically nothing of the ultimate process involved in the production of a

drop of milk, but all evidence so far seems to show that the cow no better than the human can make something out of nothing. She is simply a "transforming station." Her foods must have "the makings" of these necessary elements, and how well these facts are realized today by better dairymen. What sort of a calf would a breeder expect today from a cow fed on dry corn stalks or straw (a dead one probably), and what quality of milk would be produced by such a cow? Medical men should know more about the balanced ration fed today on better farms. The wide range of concentrates, the succulents such as green feeds, silages, and beet pulp, the preponderance of legumes in the hay mixtures, notably alfalfa; the feeding of molasses, the addition of calcium carbonate and ground bone meal. We feed a cow today on Certified Farms to not only help her produce a good healthy calf but also produce milk that is high in nutrition and growth power.

As a mother is fed doth she nourish her child, both before and after birth, and from the time the baby is weaned until it attains full growth it can best obtain many of these food factors in clean, fresh, nutritious, safe, raw milk.

This nutritional aspect of the milk question places a renewed responsibility upon the medical profession.

Chapin says, "Milk is a physiologic fluid, not merely a mixture of fats, proteins, carbohydrates, mineral matter and water, or a combination of protein matter and calories. As more is learned of its properties, the greater will be the demand for raw milk in the treatment of various nutritional defects. We must always remember that physical changes may interfere with some physiologic function. Many babies who do not thrive or cease to thrive on heated milk do well on a change to raw milk.

"The desirability of pasteurizing milk that is handled carelessly or in large bulk is not here called in question. It is a safeguard that should be generally applied to all milk not *properly handled at the source.*"

Chapin continued by saying that, "The constantly broadening knowledge of nutrition that is resulting from chemical studies and from animal feeding experiments should be a warning against passing of laws that will prevent progress, and no regulations should be tolerated that will put normal, physiologic milk beyond the reach of physicians and the public at large. Certified Milk, produced with scrupulous care, under the oversight of a reliable medical commission, and *then properly handled in the home*, is the ideal solution of the milk problem, at least as far as the delicate infant or invalid is concerned."

So much for generalities on the question of nutrition. Now for new and specific milk qualities. It is at our command today to feed more or less nutrition into milk. We can put more or less of several minerals in milk by feeding. We can put more or less of several vitamins in milk by feeding. We can considerably change the color of milk by feeding, and we have found that the curd tension of cow's milk varies greatly.

Almost suddenly we are publicly offered a milk with one vitamin greatly increased. We have often heard of "Sunshine in our Souls," but now we have "Sunshine in our Milk." For long years nobody has doubted the hidden virtues of the oil from the Sacred Cod—then science comes along and artificially puts this virtue in a tasteless oil-viosterol. Another step and we have it in milk—Vitamin D—at least 160 Steenbock rat units to the quart, equivalent to 10 drops of viosterol or three teaspoons of cod liver oil.

You men who feed babies tell us that Vitamin D is an absolute necessity for proper nutrition. If so, then how could it better be given than in the milk. Tasteless, constant in potency, no trouble in administration, inexpensive.

There is a rapidly increasing appreciation on the part of pediatrists for this milk throughout the country, and such appreciation has been expressed by no one better than Dr. Eustis of Boston, who spoke as follows at our last Annual Meeting in Washington last May:

"Speaking for a moment as a practicing pediatrician who has used Vitamin D Milk on my patients all this winter, the patients have liked it, the mother has liked it, it has worked. I have seen the work done in hospitals in Boston. It works. I have gone further; I have watched in the last few months some nursing mothers who were fed on Vitamin D Milk, yeast milk as Hess calls it, and their breast milk contains a very appreciable quantity of Vitamin D. I know the stuff is there."

What we have noted about an increased Vitamin D content is likely to soon be true of other vitamins and mineral matters.

Research along these lines has been largely confined to Certified Milk and thus the reason for the medical profession "to live and move and have its being" with the milk problem.

Truly it has been said and more truly can it now be said that "If out of the mouths of babes could come the truth of what goes into the mouths of babes more Certified Milk would be used."

SOCIETIES

RHODE ISLAND MEDICAL SOCIETY

REPORTS OF COMMITTEES

(*Continued from the July issue*)

REPORT OF THE MEETINGS OF THE NEW ENGLAND MEDICAL COUNCIL

The New England Medical Council was established in 1926. Each year our Association sends to the meetings of this Council three delegates, the President and Secretary of the Society being delegates ex-officio in addition.

Apparently there has been no report before the House of Delegates of these meetings since the Council was established. It is the custom of the Council to hold two meetings each year. The proceedings of these meetings are published in full in the *New England Medical Journal.* Members of our Society are probably less familiar with these proceedings than of those of other states, inasmuch as we have our own medical journal, and the *New England Medical Journal* is probably not so universally read.

Inasmuch as I automatically go off the committee at the coming annual meeting, I have been asked to give some report of the Council meetings, a thing which ought to be done at least once a year.

This report must necessarily be quite sketchy, and will cover the meetings of the last three years, most of which meetings I have attended.

The meeting on February 19, 1930, had for the subject of discussion, "The Relation of Clinics and Health Association to the Medical Profession." Papers were read by Dr. Roger I. Lee of Boston, Dr. D. L. Richardson of Providence, Dr. George Blumer of Yale, and Dr. George H. Bigelow of Boston. At this meeting there were an unusual number of papers. More commonly there is one paper which presents the subject for discussion in a general way, and a more or less general discussion follows.

September 25, 1930, "The Practice of Medicine in Industry" was the subject. This paper was read by Dr. Harold W. Stevens of the Harvard School of Public Health, and was discussed by Dr. Cecil Drinker, Professor of Physiology at Harvard, Dr. R. S. Quinby of the Hood Rubber Company, and Dr. W. Irving Clark, Surgeon to the Norton Company, Worcester.

On February 12, 1931, Herbert E. Locke, Esq., of Augusta, Me., attorney for the Maine Medical Association, read a paper upon "The Malpractice Suit; Why and Wherefore." The subject was very ably presented from the point of view of the legal profession rather than that of the medical profession, and was followed by a very interesting discussion.

The next meeting was on December 1, 1931, at which time Dr. Stephen Rushmore of Boston presented a paper on "The Medical Practice Act." At this meeting the health officers from all the states of New England were present and there was a very general and quite a satisfactory discussion of the subject.

March 10, 1932, the discussion of Mr. Locke's paper on "Malpractice Suits" was carried over from the meeting of a year previously. In the evening of that day, Dr. Iago Galdston of New York, and Dr. Morris Fishbein of the Journal of the American Medical Association, spoke upon the subject of "Medical Publicity by Organizations and Individual Physicians."

At the October meeting in 1932, the question of Post-Graduate Education, with special reference to the Treatment of Fractures, was discussed particularly by Dr. Charles L. Scudder. His plan was approved by the Council, but no special method of financing this plan was suggested or adopted.

At this meeting there was a vote of protest sent Dr. Edward H. Cary against government aid to the soldiers of the World War for surgical or medical services for disabilities of non-service origin.

In February of this year the topic was "Medical Economics, with particular reference to the Cost of Medical Care." The papers and discussions were good, but did not lead to anything more definite than such has in the past.

Respectfully submitted,

FRANK T. FULTON, M.D.

Public Relations Committee

(No report made)

Defense Committee

(No report made)

Board of Trustees of the Medical Library Building

The Medical Library building and grounds are in good condition. The well-kept appearance of the hedge and lawn is evidence of the efficient service rendered by the janitor, Mr. G. H. Peterson. During the past year a leak in the roof was promptly repaired and a drain pipe was replaced which it is hoped will prevent similar leaks in the future. Some damage is being done to the linoleum by tilting back the heavy chairs in the reading room. Members should be cautioned against this practice.

Respectfully submitted,

Albert H. Miller, *Chairman*

Annual Report of Committee on Maternal Mortality

The Committee on Maternal Mortality has continued during the past year its investigation of every death reported as due to puerperal conditions which has occurred in the state. There were sixty-four cases so certified this year as compared with fifty-eight last year. After thorough investigation of each case, the Committee considered that five of the sixty-four cases reported as due to puerperal conditions were not due to any puerperal condition. Last year, of the fifty-eight cases certified as puerperal, the Committee considered only forty-four to be such in fact. For the two years, therefore, one hundred and twenty-two were certified and were classified under the rules of the Census Bureau as puerperal, and the Committee considered, after careful personal investigation of each case, that only one hundred and two were actually due to puerperal conditions.

As has been the case for many years, the condition which accounts for the largest number of puerperal deaths is puerperal infection. The next most frequent cause was albuminuria and eclampsia. It is interesting to note that of the twenty-three cases reported as due to albuminuria and eclampsia seven were found on investigation to give a history which justified a diagnosis of chronic nephritis as a primary cause and pregnancy a secondary cause. One death was reported as following Cæsarian Section, but our investigation showed that another patient had a Cæsarian Section, so that there were two deaths following Cæsarian Section, the same as last year. There were thirteen deaths reported as due to hemorrhage, of which the committee felt there was one which was due to causes other than hemorrhage. Hemorrhage continues to be one of the preventable accidents to take a large toll of puerperal deaths.

Your Committee is working in conjunction with a similar committee of the New England Gynecological and Obstetrical Society in an effort to have the reports of the various health departments of the New England states uniform in makeup so that a large body of statistics may be accumulated for intelligent comparison. Until this objective is reached, comparisons will be futile. The health departments have shown themselves most co-operative, and we feel that we shall accomplish something worth while in the not-too-distant future.

Dr. Round and his staff have made every effort to further the success of our work and we gratefully acknowledge his helpfulness.

No detailed report or analysis of our statistics at the present time would be of value, as the number of cases is still too small. The Committee would like to be continued so that it may carry on the investigation for at least three more years.

Respectfully submitted,

Edward S. Brackett, M.D.,
Chairman

(Report accepted and committee continued.)

Further Committee Reports continued in a future issue.

NEWS ITEMS

Dr. Isaac Gerber of Providence was elected president of the New England Roentgen Ray Society at its annual meeting held in Boston May 20, 1933.

The other officers elected were vice-president, Dr. Frank E. Wheatley of Boston, and secretary-treasurer, Dr. Thomas R. Healy, also of Boston.